IN THE CLAIMS

Claim 1 has been amended as follows:

1. (Currently amended) An implantable heart monitoring device comprising:

a control circuit;

a first sensor adapted to be disposed in a coronary sinus region of a heart to sense ~~at least one constituent of~~ blood oxygen in said coronary sinus region, and supplying a first sensor signal representing ~~said constituent~~ a blood oxygen level to the control circuit;

at least one further sensor adapted to interact with the heart to sense activity of the heart, said at least one further sensor supplying a further sensor signal representing said activity to the control circuit; and

said control circuit, from said further sensor signal, identifying a first portion in a diastolic portion, and a second ~~portions~~ portion in a systolic portion, of a same heart cycle of the heart, and from said first sensor signal, determining a first value related to said blood ~~constituent~~ oxygen level that occurs during said first portion and identifying said first value as having occurred during said first portion and determining a second value related to said blood constituent that occurs during said second portion and identifying said second value as having occurred during said second portion, and said control circuit emitting an output signal indicative of functioning of the heart dependent on a relation between said first value and said second value.

Claim 2 has been cancelled.

2. (Cancelled)

Claim 3 has been amended as follows:

3. (Currently amended) An implantable heart-monitoring device as claimed in claim [[2]] 1 wherein said control device detects said second value in said second portion within a final 70% of said diastolic portion.

claim 4 has been cancelled.

4. (Cancelled)

5. (Original) An implantable heart-monitoring device as claimed in claim 1 wherein said control circuit detects said first and second values in each of a plurality of heart cycles of the heart.

Claim 6 has been amended as follows:

6. (Currently amended) An implantable heart monitoring device as claimed in claim 1 comprising a therapeutic device ~~adapted to executed a measure~~ that executes an action related to cardiac therapy, wherein said control circuit emits a ~~trigger~~ control signal to said therapeutic device that controls said action upon an occurrence selected from the group consisting of said first value fulfilling a predetermined condition, said second value fulfilling a predetermined condition, and a relationship between said first value and said second values fulfilling a predetermined condition.

7. (Original) An implantable heart monitoring device as claimed in claim 6 wherein said occurrence is said relationship between said first value and said second value fulfilling a predetermined condition, and wherein said predetermined

condition is said first value being lower than a first predetermined level and said second value being higher than a second predetermined level.

8. (Original) An implantable heart monitoring device as claimed in claim 6 wherein said occurrence is said relationship between said first value and said second value fulfilling a predetermined condition, and wherein said predetermined condition is said first value decreasing by more than a first predetermined amount over a plurality of heart cycles while said second value decreases less than a second predetermined amount over said plurality of heart cycles.

Claim 9 has been amended as follows:

9. (Currently amended) An implantable heart monitoring device as claimed in claim 6 wherein said therapeutic device is a stimulation pulse generator which emits stimulation pulses ~~adapted to be supplied~~ to the heart, and wherein said ~~measure~~ action is ~~controlling~~ delivery of said stimulation pulses to the heart.

Claim 10 has been amended as follows:

10. (Currently amended) An implantable heart monitoring device as claimed in claim 6 wherein said therapeutic device is a drug delivery device ~~adapted to deliver~~ that delivers a drug to a subject in whom said heart monitoring device is implanted, and wherein said action ~~measure~~ is ~~controlling~~ delivery of said drug.

Claim 11 has been amended as follows:

11. (Currently amended) An implantable heart-monitoring device as claimed in claim 6 wherein said therapeutic device is a warning signal generator, and wherein said action ~~measure~~ is to emit a warning signal.

Claim 12 has been amended as follows:

12. (Currently amended) An implantable heart monitoring device as claimed in claim 6 further comprising an activity level sensor that senses ~~adapted to sense~~ a level of physical activity of a subject in whom the heart monitoring device is implanted, said activity sensor supplying an activity level signal to said control circuit, and said control circuit determining whether to emit said control signal dependent on said occurrence and said activity level.

Claim 13 has been amended as follows:

13. (Currently amended) An implantable heart monitoring system comprising:

a control circuit;

a lead arrangement connected to said control circuit and ~~adapted~~ configured for implantation in a subject;

a first sensor carried by said lead arrangement and adapted to be disposed in a coronary sinus region of a heart to sense ~~at least one constituent of~~ blood oxygen in said coronary sinus region, and supplying a first sensor signal representing ~~said constituent~~ a blood oxygen level to the control circuit;

at least one further sensor carried by said lead arrangement and adapted to interact with the heart to sense activity of the heart, said at least one further sensor supplying a further sensor signal representing said activity to the control circuit; and

said control circuit, from said further sensor signal, identifying a first portion in a diastolic portion, and a second ~~portions~~ portion in a systolic portion,

of a same heart cycle of the heart, and from said first sensor signal, determining a first value related to said blood ~~constituent~~ oxygen level that occurs during said first portion and identifying said first value as having occurred during said first portion and determining a second value related to said blood ~~constituent~~ oxygen level that occurs during said second portion and identifying said second value as having occurred during said second portion, and said control circuit emitting an output signal indicative of functioning of the heart dependent on a relation between said first value and said second value.

Claim 14 has been cancelled

14. (Cancelled).

Claim 15 has been amended as follows:

15. (Currently amended) An implantable heart-monitoring system as claimed in claim ~~14~~ 13 wherein said control device detects said second value in said second portion within a final 70% of said diastolic portion.

Claim 16 has been cancelled

16. (Cancelled).

17. (Original) An implantable heart-monitoring system as claimed in claim 13 wherein said control circuit detects said first and second values in each of a plurality of heart cycles of the heart.

Claim 18 has been amended as follows:

18. (Currently amended) An implantable heart monitoring system as claimed in claim 13 comprising a therapeutic device ~~adapted to executed a measure~~ that executes an action related to cardiac therapy, wherein said control circuit emits

a ~~trigger~~ control signal to said therapeutic device that controls said action upon an occurrence selected from the group consisting of said first value fulfilling a predetermined condition, said second value fulfilling a predetermined condition, and a relationship between said first value and said second values fulfilling a predetermined condition.

19. (Original) An implantable heart monitoring system as claimed in claim 18 wherein said occurrence is said relationship between said first value and said second value fulfilling a predetermined condition, and wherein said predetermined condition is said first value being lower than a first predetermined level and said second value being higher than a second predetermined level.

20. (Original) An implantable heart monitoring system as claimed in claim 18 wherein said occurrence is said relationship between said first value and said second value fulfilling a predetermined condition, and wherein said predetermined condition is said first value decreasing by more than a first predetermined amount over a plurality of heart cycles while said second value decreases less than a second predetermined amount over said plurality of heart cycles.

Claim 21 has been amended as follows:

21. (Currently amended) An implantable heart monitoring system as claimed in claim 18 wherein said therapeutic device is a stimulation pulse generator which emits stimulation pulses ~~adapted to be supplied~~ to the heart, and wherein said ~~measure~~ action is ~~controlling~~ delivery of said stimulation pulses to the heart.

Claim 22 has been amended as follows:

22. (Currently amended) An implantable heart monitoring system as claimed in claim 18 wherein said therapeutic device is a drug delivery device ~~adapted to deliver~~ that delivers a drug to a subject in whom said heart monitoring device is implanted, and wherein said action ~~measure~~ is ~~controlling~~ delivery of said drug.

Claim 23 has been amended as follows:

23. (Currently amended) An implantable heart-monitoring system as claimed in claim 18 wherein said therapeutic device is a warning signal generator, and wherein said action ~~measure~~ is to emit a warning signal.

Claim 24 has been amended as follows:

24. (Currently amended) An implantable heart monitoring system as claimed in claim 18 further comprising an activity level sensor ~~adapted to sense~~ that senses a level of physical activity of a subject in whom the heart monitoring device is implanted, said activity sensor supplying an activity level signal to said control circuit, and said control circuit determining whether to emit said control signal dependent on said occurrence and said activity level.

Claim 25 has been amended as follows:

25. (Currently amended) An implantable hear monitoring system as claimed in claim 13 wherein said lead arrangement includes a first lead carrying said first sensor, and wherein said implantable heart monitoring system further comprises an electrode also carried on said first lead, said first lead having a distal end and said electrode being carried on said first lead closer to said distal end than said first

sensor, and wherein said first lead is ~~adapted~~ configured to introduce said electrode via the coronary sinus into a cardiac vein.

Claim 26 has been amended as follows:

26. (Currently amended) An implantable heart monitoring system as claimed in claim 25 wherein said control circuit includes circuitry ~~for generating~~ that generates stimulation pulses, and wherein said stimulation pulses are delivered via said first lead and said electrode.

27. (Original) An implantable hear monitoring system as claimed in claim 25 wherein said lead arrangement includes a second lead carrying a further electrode adapted for positioning in the right ventricle of the heart.

Claim 28 has been amended as follows:

28. (Currently amended) A heart monitoring method comprising the steps of:

disposing a first sensor in a coronary sinus region of a heart and sensing at least ~~one constituent of~~ blood oxygen in said coronary sinus region with said first sensor, and generating a first sensor signal representing blood oxygen level ~~said constituent~~;

disposing at least one further sensor adapted to interact with the heart and sensing activity of the heart with said at least one further sensor, and generating a further sensor signal representing said activity; and

from said further sensor signal, electronically identifying a first portion in a diastolic portion, and a second portion in a systolic portion ~~portions~~ of a same heart cycle of the heart, and from said first sensor signal, electronically determining a first value related to said blood ~~constituent~~

oxygen level that occurs during said first portion and identifying said first value as having occurred during said first portion and a second value related to said blood ~~constituent~~ oxygen level that occurs during said second portion and identifying said second value as having occurred during said second portion, and emitting an output signal indicative of functioning of the heart dependent on a relation between said first value and said second value.

Claim 29 has been cancelled.

29. (Cancelled)

Claim 30 has been amended as follows:

30. (Currently amended) A heart monitoring method as claimed in claim ~~29~~ 28 comprising electronically detecting said second value in said second portion within a final 70% of said diastolic portion.

Claim 31 has been amended as follows:

31. (Cancelled)

32. (Original) A heart monitoring method as claimed in claim 28 comprising electronically detecting said first and second values in each of a plurality of heart cycles of the heart.

Claim 33 has been amended as follows:

33. (Currently amended) A heart monitoring method as claimed in claim 28 comprising executing a therapeutic action ~~measure~~ related to cardiac therapy, upon an occurrence selected from the group consisting of said first value fulfilling a predetermined condition, said second value fulfilling a predetermined

condition, and a relationship between said first value and said second values fulfilling a predetermined condition.

34. (Original) A heart monitoring method as claimed in claim 33 wherein said occurrence is said relationship between said first value and said second value fulfilling a predetermined condition, and wherein said predetermined condition is said first value being lower than a first predetermined level and said second value being higher than a second predetermined level.

35. (Original) A heart monitoring method as claimed in claim 33 wherein said occurrence is said relationship between said first value and said second value fulfilling a predetermined condition, and wherein said predetermined condition is said first value decreasing by more than a first predetermined amount over a plurality of heart cycles while said second value decreases less than a second predetermined amount over said plurality of heart cycles.

Claim 36 has been amended as follows:

36. (Currently amended) A heart monitoring method as claimed in claim 33 comprising emitting <u>stimulation pulse</u> to the heart, and controlling delivery of said stimulation pulses to the heart as said therapeutic <u>action</u> ~~measure~~.

Claim 37 has been amended as follows:

37. (Currently amended) A heart monitoring method as claimed in claim 33 comprising delivering a drug to the subject in whom said heart monitoring device is implanted, and controlling delivery of said drug as said therapeutic <u>action</u> ~~measure~~.

Claim 38 has been amended as follows:

38. (Currently amended) A heart monitoring method as claimed in claim 33 comprising ~~to emit~~ emitting a warning signal as said therapeutic measure.

Claim 39 has been amended as follows:

39. (Currently amended) A heart monitoring method as claimed in claim 33 comprising sensing a level of physical activity of the subject in whom the heart monitoring device is implanted, and generating an activity level signal, and electronically determining whether to execute ~~emit~~ said ~~control signal~~ action dependent on said occurrence and said activity level.